



EUROPEAN DATA PROTECTION SUPERVISOR

Opinion 6/2021

on the Proposal for a Pilot Regime for Market Infrastructures based on Distributed Ledger Technology



23 April 2021

The European Data Protection Supervisor (EDPS) is an independent EU authority, its responsibilities are outlined under Article 52(2) of Regulation 2018/1725 'With respect to the processing of personal data... for ensuring that the fundamental rights and freedoms of natural persons, and in particular their right to data protection, are respected by Union institutions and bodies', and under Article 52(3) '...for advising Union institutions and bodies and data subjects on all matters concerning the processing of personal data'. Under Article 58(3)(c) of Regulation 2018/1725, the EDPS shall have the power 'to issue on his or her own initiative or on request, opinions to Union institutions and bodies and to the public on any issue related to the protection of personal data'.

Wojciech Wiewiorowski was appointed as Supervisor on 5 December 2019 for a term of five years.

Executive Summary

On 24 September 2020 the European Commission adopted its Proposal for a Regulation of the European Parliament and of the Council on a pilot regime for market infrastructures based on Distributed Ledger Technology (COM(2020)594 final). The Proposal establishes harmonised requirements for certain market participants to apply for and be granted permission to operate digital ledger technology (DLT) market infrastructures.

The EDPS highlights that the protection of personal data does not constitute an obstacle to innovation and in particular, for the development of new technologies in the financial sector. At the same time, he recalls that measures adopted at EU level regarding innovative technologies involving the processing of personal data must comply with the general principles of **necessity and proportionality**. Moreover, given the lack of full view of the of these new technologies impact on our society, **the EDPS considers that the precautionary principle approach should be followed.**

The EDPS notes that depending on the DLT's configuration, the meta or transactional data stored therein may be considered personal data, if it relates to an identified or identifiable natural person. Thus, the controllers must carefully analyse and document the DLT's configuration in order to determine whether personal data is processed thereby and as a consequence, the operations are subject to the data protection obligations.

The EDPS highlights that the technology behind some digital ledgers, particularly those that are public and permissionless, rises crucial questions with regard to its compatibility with data protection requirements.

The EDPS is of the view that a discussion about the compatibility of DLT systems in general with the data protection framework should take place before the Proposal enters into force.

The EDPS notes that in case of DLT's containing on-chain personal data, the processing operations relating thereto will likely meet the criteria for the classification of the processing operation as of high risk. Therefore, the controller shall prior to the processing of personal data, carry out a data protection impact assessment for the envisaged processing operations. Moreover, prior approval from the competent data protection authority may be required.

The EDPS recommends that the Proposal requests, as part of the application to operate a DLT Market Infrastructure related information, where applicable, the core information in relation to the processing operations envisaged. Moreover, he recommends that operators of DLT market infrastructures should publish the privacy notice in the same place of its operating information as required by the Proposal.

The EDPS highlights that IT and cyber arrangements foreseen in the Proposal for the operation of DLT Market Infrastructures must be also in line with the obligations set by Articles 22 and 32 of the GDPR.

Finally, in the context of reporting of operational issues by DLT Market Infrastructures' operators, the EDPS recommends reminding in a recital that in cases of personal data breaches, these shall also be notified by the operator to the competent data protection authority, in

accordance with Article 33 of the GDPR, and, if applicable, to the data subjects, in accordance with Article 34 of the GDPR.

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THE EUROPEAN DATA PROTECTION SUPERVISOR,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 16 thereof,

Having regard to the Charter of Fundamental Rights of the European Union, and in particular Articles 7 and 8 thereof,

Having regard to Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (the General Data Protection Regulation)¹,

Having regard to Regulation (EU) No 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of individuals with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data², and in particular Article 42(1) thereof,

HAS ADOPTED THE FOLLOWING OPINION:

1 BACKGROUND

1. On 24 September 2020 the European Commission adopted its Proposal for a Regulation of the European Parliament and of the Council on a pilot regime for market infrastructures based on Distributed Ledger Technology (COM(2020)594 final) (the “**Proposal**”). The Proposal establishes harmonised requirements for specific market participants, namely investment firms, market operators or central securities depositories, to apply for and be granted permission to operate digital ledger technology market infrastructures (“**DLT Market Infrastructure**”) in a supervised environment with the application of specific exemptions to compliance with financial regulations. In particular, the Proposal has four objectives: providing legal certainty for crypto-assets, ensuring financial stability, protecting consumers and investors and enabling innovation towards the use of blockchain, distributed ledger technology and crypto assets.
2. This Proposal is part of a package that includes a proposal for a regulation to build markets in cryptoassets³ (the “**MICA Regulation**”), a proposal for digital operational resilience⁴ (the “**DORA Regulation**”), and a proposal to clarify or amend certain related EU financial services rules⁵. The EDPS expects to be consulted also on the other regulations of the package in line with Article 42(1) of Regulation (UE) 2018/1725.
3. On 26 February 2021 the European Commission requested the European Data Protection Supervisor (the “**EDPS**”) to issue an opinion on the Proposal, in accordance with Article 42(1) of Regulation (UE) 2018/1725. These comments are limited to the provisions of the Proposal that are relevant from a data protection perspective.

2 PRELIMINARY REMARKS REGARDING DIGITAL LEDGER TECHNOLOGIES

4. The EDPS notes that, as stated in the Explanatory Memorandum, the Proposal responds to the European Union policy objective of developing and promoting the uptake of transformative technologies in the financial sector. To this purpose, the Proposal lays down a legal framework shaping the requirements of multilateral trading facilities and securities settlement systems using DLT to temporarily operate market infrastructures using this technology while being exempted from compliance with some requirements under the Union financial services legislation.
5. The Proposal's subject scope covers investment firms, market operators and central securities depositories that wish to apply for permission to operate a DLT Market Infrastructure, i.e. either a DLT multilateral trading facility or a DLT securities settlement system. In this regard, the DLT multilateral trading facility consist of a multilateral system which brings together multiple third-party buying and selling interests in DLT transferable securities (i.e. *crypto-assets that qualify as financial instruments*), and that may be permitted to record and settle transactions in DLT transferable securities and to provide safekeeping services related thereto⁶. The DLT securities settlement system's role is to settle transactions in DLT transferable securities against payment.
6. The EDPS highlights that the protection of personal **data does not constitute an obstacle to innovation and in particular, for the development of new technologies, both in the financial sector or in other areas**. At the same time, we insist that the general principles of necessity and proportionality must guide the adoption of measures at EU level that involve processing of personal data in the financial sector. Moreover, as in any case when development and roll-out of new technologies is not supported by a full and clear view of its impact on society, **the precautionary principle approach should be followed**.
7. The EDPS notes that the technology behind digital ledgers involves a peer-to-peer network based on a synchronised and replicated data infrastructure built upon a cryptographic system. This system uses pairs of keys, namely public keys (for identification) and private keys (for authentication and encryption) connected by means of a mathematical relationship⁷. Multiple peers (computers) store the transactions chronologically by linking each new published data block to previous blocks of transactions through a cryptographic hashing process. The peers store each a replica of the ledger⁸.
8. The EDPS acknowledges that the data categories stored through DLT systems may vary significantly from one to another, depending for example, on whether they are permissioned or permissionless, the specific technical and organisational measures applied, etc. In this regard, the data stored most commonly in DLT are "the header", which includes the timestamp, the identity of the block's source and the previous block hash, and "the block content" (or payload) which contains the data to be stored, i.e. the transaction⁹. **Depending on the DLT's configuration, the meta- or transactional data stored therein may be considered personal data, if it relates to an identified or identifiable natural person**. The EDPB has stated that, in principle, transactional data in encrypted form or subject to a hashing process is also considered personal data, as they are not irreversibly prevented from identification¹⁰. Whereas certain DLT systems may opt for a design that stores data off-chain where the DLT merely holds validity proofs, the EDPS notes that, **considering existing and forthcoming guidance of data protection authorities, controllers must carefully analyse**

and document whether such proofs are still personal data and thus, the processing is subject to data protection obligations¹¹.

9. The EDPS highlights that **the technology behind some digital ledgers**, particularly those that are public and permissionless, **raises crucial conceptual questions with regard to its compatibility with data protection requirements**, *inter alia*, the difficulty in identifying the controller and the processor roles in DLT against the requirement of a clear allocation of responsibilities for personal data processing as required by Article 79 of the GDPR, the cross-border scope of the transactions or the immutability and perpetual data storage by the blocks of the ledger in relation to the data protection principle of data accuracy and the right to object. Moreover, ESMA has pointed to privacy issues in relation to clients' data being misused to front run¹² transactions of others¹³.
10. The EDPS is of the view that **a discussion about the compatibility of DLT systems in general with the data protection framework should take place before the Proposal enters into force**. Lacking this discussion, for the purposes of this Opinion, the EDPS wishes to stress that the DLT Market Infrastructures must be able to demonstrate at least that GDPR compliance is achieved with respect to the processing operations taking place therein (accountability principle).

3 GENERAL COMMENTS ON THE PILOT REGIME FOR DLT MARKET INFRASTRUCTURES

11. With the caveats expressed in the previous section, **the EDPS welcomes the aim of the Proposal to create a supervised space for experimentation** (the so-called regulatory sandbox) based on specific derogations from compliance with the Union financial legislation for the use of DLT in the trading and post-trading of crypto-assets that qualify as financial instruments. The EDPS insists that the crypto-assets traded in the DLT Market Infrastructures covered by the Proposal should be only those using a DLT configuration that complies with the European and national data protection frameworks.
12. The EDPS acknowledges that the Proposal will contribute to the integration of the Capital Markets Union, and more in particular, facilitate the cross-border operation of Market Infrastructures, *inter alia*, by speeding the clearing and settlement by reducing the number of intermediaries involved in the process and by making the reconciliation more efficient, facilitating the recording of ownership of securities and the safekeeping of assets, or reducing the ambiguity of contract terms¹⁴. These benefits have also been acknowledged in the Draft Report by the European Parliament on the Proposal¹⁵. Moreover, the framework created by the Proposal will also allow financial supervisors and legislators to identify risks and the legislative gaps, while regulators and firms themselves will gain valuable knowledge about the application of DLT.
13. The EDPS notes that **the Proposal appears to apply only to permissioned blockchains**, and not to public and permissionless ones. In this regard, the Proposal refers to the rules on the functioning of the *proprietary* DLT they operate (Recital 28), to the possibility of the operators lose their permissions and exemptions where a flaw has been discovered in the *underlying technology* or the *services or activities provided* by the DLT Market Infrastructure (Recital 37), or the obligation by operators of DLT Market Infrastructure to establish rules on the functioning of the DLT that *they operate* (Article 6.2)¹⁶. Based on the aforesaid, **the EDPS concludes that the operators of the DLT Market Infrastructures would be controllers**

under the GDPR, when recording and settling transactions in DLT transferable securities involving on-chain personal data.

14. At the same time, the EDPS would like to highlight that the benefits of new technologies do not come without risks. Indeed, in case of DLT's containing on-chain personal data, **the processing operations relating thereto will likely meet two or more of the criteria introduced by the EDPB¹⁷ that result in the classification of the processing operation as of high risk**, *inter alia*, data processed on a large scale, datasets that have been matched or combined, innovative use or applying technological or organisational solutions, and/or data transfer across borders outside the European Union. As a result, pursuant to Article 35 of the GDPR, the controller shall prior to the processing of personal data, carry out a **Data Protection Impact Assessment (DPIA)** for the envisaged processing operations. Moreover, the EDPS notes that should the processing fulfill the criteria for a high-risk processing, **prior approval from the competent data protection authority may be required¹⁸**.

4 SPECIFIC COMMENTS

4.1 Regarding the activities and the roles for the processing of personal data within the operation of DLT market infrastructures

15. The EDPS notes that the entities applying for permission to operate a DLT Market Infrastructure must provide, together with its application, a number of documents, including: a business plan, information on the functioning of its proprietary DLT, its overall IT and cyber arrangements, safekeeping arrangements and the transition strategy (Article 7(2) and Article 8(2) of the Proposal). In view of the risk of potential lack of clarity with regard to the controller and the processor roles within DLT Market Infrastructures, **the EDPS recommends including under Article 7(2) and 8(2) of the Proposal, as part of the information required in the context of the applications**, the following: “*where applicable, the list of the foreseen processing operations involving personal data, the allocation of roles and responsibilities of each operator pursuant to the GDPR within the DLT Market Infrastructure, as well as the main risks envisaged and mitigation strategies for what concerns data protection*”. In this regard, the EDPS recalls that pursuant to Article 4(1) of the GDPR “*personal data*” means any information relating to an identified or identifiable natural person, for example, the name, identification number, location data, an online identifier, a private or public key, or dynamic IP addresses¹⁹.
16. The EDPS notes that the Proposal requires operators of DLT market infrastructures to publicly disclose up-to-date, clear and detailed **information defining the rights, obligations, responsibilities and liabilities** (Article 6(1) of the Proposal). For the sake of clarity, the EDPS recommends including in the same place where such documentation is published **the privacy notice containing the list of the processing operations** carried out within the DLT Market Infrastructure as well as **the roles and responsibilities of the stakeholders** involved in the processing of personal data.
17. The EDPS also highlights that when the activities relating to the operation of DLT Market Infrastructures involve the processing of personal data, **a legal basis for the processing as laid down under Article 6 of the GDPR will be necessary**. In case of DLT market infrastructures, the EDPS points to Article 6(1)(b) “*processing necessary for the performance of a contract to which the data subject is party*” or Article 6(1)(c), processing necessary for compliance with a legal obligation, as the most appropriate legal basis for such activities.

4.2 Data protection safeguards within DLT Market Infrastructures

18. The EDPS welcomes Recital 30, Article 6(4) and Article 6(5) of the Proposal requiring the operators of DLT Market Infrastructures to adopt the necessary IT and cyber arrangements to ensure the continued **transparency, availability, reliability and security of their services** and activities, including the reliability of smart contracts used on the DLT. These arrangements shall also ensure the **integrity, security and confidentiality of any data stored**, and the availability and accessibility of such data. The EDPS highlights that **these measures must be also in line with the obligations established under Article 32 of the GDPR** regarding the implementation of appropriate technical and organisational security measures to ensure the level of security appropriate to the risk. In particular, with regard to smart contracts, the EDPS draws attention to Article 22 of the GDPR, in accordance with which the data subject shall have the right not to be subject to a decision based solely on automated processing that produces legal effects or significantly affects him or her. In this context, the controller shall implement suitable measures to safeguard the rights and freedoms and legitimate interests of data subjects.
19. The EDPS notes that the Proposal requires the operators of DLT Market Infrastructures to **inform the competent authorities** and ESMA about certain operational issues, in particular, to notify any unauthorised access, material functioning, loss, cyber-attacks or other cyber-threats, fraud, theft or other serious malpractice suffered by the DLT Market Infrastructure (Recital 38 and Article 9(1)(b) of the Proposal).
20. In this regard, the EDPS notes that **Data Protection Supervisory Authorities** are not included in the definition of “competent authority” under Article 2(21) of the Proposal for the purposes of this regulation. However, Article 33 of the GDPR **establishes an obligation to notify DPAs** in cases of data breaches. Therefore, for the sake of clarity, the EDPS recommends reminding in a Recital that *“in case of a personal data breach, the operator of DLT market infrastructures shall also notify the relevant data protection supervisory authority thereof, in accordance with the GDPR”*. The EDPS would like to highlight that the notification foreseen in Article 9(1)(b) of the Proposal should not be understood as an alternative or substitute to the notification under Article 33 of the GDPR.

5 CONCLUSIONS

In light of the above, the EDPS:

- recalls that the protection of personal data does not constitute an obstacle to innovation and, in particular, for the development of new technologies, notably in the financial sector.
- highlights that the technology behind some digital ledgers, particularly those that are public and permissionless, rises crucial conceptual questions with regard to data protection requirements; recommends therefore that the discussion about the possible way to ensure compatibility of DLT systems with the data protection framework should take place before the Proposal enters into force.
- stresses that the crypto-assets traded in the DLT Market Infrastructures covered by the Proposal should be only those using a DLT configuration which complies with the data protection framework.

- suggest to also include, as part of the information required to the operator in the context of its application to operate a DLT Market Infrastructure, where applicable, the list of the foreseen processing operations involving personal data, the allocation of roles and responsibilities of each operator pursuant to the GDPR within the DLT Market Infrastructure, as well as the main risks envisaged and mitigation strategies for what concerns data protection.
- highlights that IT and cyber arrangements foreseen in the Proposal for the operation of DLT Market Infrastructures must be also in line with the obligations set by Articles 22 and 32 of the GDPR.
- recommends reminding in a recital, in the context of reporting of operational issues by DLT Market Infrastructures' operators, that in cases of personal data breaches, these shall also be notified by the operator to the competent data protection supervisory authority, in accordance with Article 33 of the GDPR, and, if applicable, to data subjects, in accordance with Article 34 of the GDPR.

Brussels, 23 April 2021

Wojciech Rafał WIEWIÓROWSKI

(e-signed)

Notes

¹ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), L119 of 4.5.2016.

² Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC, L 295, 21.11.2018.

³ Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937, COM/2020/593 final. Available at [EUR-Lex - 52020PC0593 - EN - EUR-Lex \(europa.eu\)](#)

⁴ Proposal for a Regulation of the European Parliament and of the Council on Digital Operational Resilience for the Financial sector and Amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014 and (EU) No 909/2014, COM/2020/595 final, available at [EUR-Lex - 52020PC0595 - EN - EUR-Lex \(europa.eu\)](#)

⁵ Proposal for a Directive of the European Parliament and of the Council amending Directives 2006/43/EC, 2009/65/EC, 2009/138/EU, 2011/61/EU, EU/2013/36, 2014/65/EU, (EU) 2015/2366 and EU/2016/2341, COM/2020/596 final. Available at [EUR-Lex - 52020PC0596 - EN - EUR-Lex \(europa.eu\)](#)

⁶ Article 2(3) of the Proposal

⁷ “Blockchains and Data Protection in the European Union”, Michele Finck, EDPL 1/2018, available at https://edpl.lexxion.eu/data/article/12327/pdf/edpl_2018_01-007.pdf

⁸ The potential impact of DLTs on securities post-trading harmonisation and on the wider EU financial market integration available at https://www.ecb.europa.eu/paym/groups/ami/shared/pdf/201709_dlt_impact_on_harmonisation_and_integration.pdf

⁹ Idem, Blockchains and Data Protection in the European Union, Michele Finck, EDPL 1/2018

¹⁰ See Article 29 Data Protection Working Party Opinion 05/2014 on Anonymisation Techniques, adopted 10 April 2014

¹¹ Idem, Blockchains and Data Protection in the European Union, Michele Finck, EDPL 1/2018.

See also “*They who must not be Identified – Distinguishing Personal from Non-Personal Data under the GDPR*”, Michèle Finck, Frank Pallas, Max Planck Institute for Innovation and Competition Research Paper No. 19-14. available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3462948

¹² “*Front-running is trading stock or any other financial asset by a broker who has inside knowledge of a future transaction that is about to affect its price substantially. A broker may also front-run based on insider knowledge that his or her firm is about to issue a buy or sell recommendation to clients that will almost certainly affect the price of an asset*”. <https://www.investopedia.com/terms/f/frontrunning.asp>

¹³ European Securities and Markets Authority’s, Report with advice on Initial Coin Offerings and Crypto-Assets (ESMA50-157-1391), available at [esma50-157-1391_crypto_advice.pdf \(europa.eu\)](#)

¹⁴ [Briefing European Parliamentary Research Service \(europa.eu\)](#), page 5, available at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599348/EPRS_BRI\(2017\)599348_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599348/EPRS_BRI(2017)599348_EN.pdf)

¹⁵ [PR_COD_1amCom \(europa.eu\)](#) DRAFT REPORT on the proposal for a regulation of the European Parliament and of the Council on a pilot regime for market infrastructures based on distributed ledger technology (COM(2020)0594 – C9-0305/2020 – 2020/0267(COD)) Committee on Economic and Monetary Affairs Rapporteur: Johan Van Overtveldt

¹⁶ See also <https://adan.eu/wp-content/uploads/2021-01-11-Adan-EUCI-Pilot-Regime-Shortcomings-and-proposals-1.pdf>

¹⁷ Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is “likely to result in a high risk” for the purposes of Regulation 2016/679

¹⁸ Article 36 GDPR.

¹⁹ See CJEU ruling in *Breyer v. Germany* (Case 582/14),